

## On the CHRYSIDES of North America.

BY EDWARD NORTON.

### *Table to assist in determining the genera.*

Abdomen convex above, beneath plane or concave; space between the eyes wide, only partly hidden by the first two joints of antennæ; mouth not lengthened.

Anterior border of third abdominal segment without an inner series of pits.

The apical margin always more or less deeply notched; tarsal claws serrate or pectinate within.....ELAMPUS.

The apical margin always rounded or merely sinuate.

Tarsal claws with several inner teeth.....HOLOPYGA.

Tarsal claws with one inner tooth.....HEDYCHRUM.

Anterior border of third abdominal segment preceded by a series of pits disposed in an arc of a circle. Nails of tarsi simple.....CHRYSIS.

### **ELAMPUS** Spin.

Apical margin of third abdominal segment with an incision more or less narrow and triangular.—(*Omalus*, Panz., Dahlb.).

**A.**—Emargination of third segment narrow, its membranous edges not turned up.

Postscutellum rounded and but slightly elevated.

Lateral margins of third segment not sinuate.

Claws pectinate; mesothorax and scutel punctured, tergum polished, having sparse minute punctures.....**sinuosum.**

Lateral margins of third segment unisinate.

Claws with two inner teeth.

Mesothorax and anterior half of scutel and tergum polished, without punctures; punctured area below postscutel extended as far as the side foveolæ.....**iridescens.**

Mesothorax and anterior third of scutel polished, with large, sparse, subobsolete punctures; tergum polished, with minute punctures; punctured area below postscutel wider than long, not extending as far as side foveolæ.....**læviventris.**

Claws with four or five teeth.

Mesothorax, scutel and tergum as above; prothorax with obsolete punctures; punctured area below postscutel extending as far as the side foveolæ.....**coruscans.**

Postscutellum mucronate.

Lateral margins of third segment bisinuate, its sides pinched.

Claws with three inner teeth.

Mesothorax and anterior third of scutel polished, but with large sparse pits; apical segment of tergum with large, subobsolete punctures.....**speculum.**



**B.**—Emarginations of third segment wider, edges of its semicircle turned up.—(*Elampus*).

Postscutellum mucronate.

Claws with three inner processes.

Tergum roughened, without distinct punctures; wings hyaline.

**versicolor.**

Claws with about four inner pectinations.

Tergum covered with small punctures; apical two-thirds of wings obscure ..... **viridicyaneus.**

***Elampus sinuosum.***

*Hedychrum sinuosum* Say, Macl. Lyc. i, 1828, 82.

*Hedychrum Janus* Hald., Proc. Acad. Nat. Sci. ii, 55.

*Hab.*—Mass., Penn., Ill., (Coll. Am. Ent. Soc.); Iowa, (Say). The color is almost entirely bright purple-violet, with the face, sides and most part of legs blue-green.

***Elampus iridescens* n. sp.**—♂.—Color of face and the two basal joints of antennæ green; occiput, prothorax and tergum, with purple reflections; remainder of thorax and legs cyaneous; tarsi luteous; wings hyaline, with the apical half of upper pair obscure; occiput, pro- and mesothorax, apical half of scutellum, and tergum, polished, without punctures; basin of face and the outer orbits with delicate cross striæ; area below postscutellum punctured, semicircular, wider than deep, its lower middle narrowly prolonged to the junction of the side foveolæ on the central metathoracic ridge; margin of third segment of tergum with a deep angulate incision, above which extends a transparent, slightly notched membrane; sides rather unisinate; spurs of anterior tibiæ not pectinate. Length .15 inch.

*Hab.*—Conn., Penn., (Coll. Am. Ent. Soc.) Four specimens.

***Elampus læviventris.***

*Omalus læviventris* Cresson, Proc. Ent. Soc. Phil. iv, 1865, 303, ♀.

*Hab.*—Colorado, (Coll. Am. Ent. Soc.)

***Elampus coruscans* n. sp.**—♀.—Color blue-green, with purple reflections above, greenish beneath; wings hyaline, their apical third obscure; occiput, pro- and mesothorax and apical third of scutellum, polished and covered with large subobsolete punctures; tergum polished, having minute sparse punctures, which are larger and sub-effaced on the sides; basin of face polished; the punctured area below postscutellum produced angularly as far as the side foveola; sides of margin of third segment of tergum unisinate, slightly pinched; claws pectinate with about five distinct teeth. Length .14—.25 inch.

*Hab.*—Can., Conn., (Coll. Am. Ent. Soc.) Two specimens.

***Elampus speculum.***

*Hedychrum speculum* Say, Bost. Jour. i, 1835, 285, 2, ♂.

*Hab.*—Illinois, (Coll. Am. Ent. Soc.) Color almost wholly bright green. Although the edges of the apical membrane are not turned



up, this doubtless belongs to the division *Elampus* of authors. The postscutel is elevated into a cone, with two punctures on the summit. The sides of the abdomen are pinched, sinuate.

**Elampus versicolor** n. sp.—♂.—Color green varying to blue in different lights, tarsi yellow; wings almost hyaline, their apical third faintly clouded; basin of face wide and with bent cross striæ; punctures on occiput and prothorax nearly as large and abundant as elsewhere; postscutel elevated into a large, flattened, punctured spine; tergum roughened, but with no distinct punctures; basin at the base of first segment wide, shallow, with a little tooth on each side; apical segment much pinched at sides, its turned up apical membrane yellowish; claws with three inner processes. Length .18 inch.

*Hab.*—Dacota, (Coll. Am. Ent. Soc.) One specimen.

**Elampus viridicyaneus** n. sp.—♀.—Color green, with the occiput, middle of thorax and of tergum violaceous; wings hyaline, with the apical half of upper pair obscure; basin of face wide, touching eyes and with cross striæ; postscutel produced into a flattened spine; basin of first segment of tergum shallow, wide, with a little tooth on each side; first and second segments covered with small distinct punctures, larger on sides and on third segment; sides of third segment pinched, notch rather large, lateral margin bisinuate; claws with four inner processes. Length .18 inch.

*Hab.*—Massachusetts, (Coll. Am. Ent. Soc.) One specimen.

**Elampus viridis** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 103.

*Hab.*—Cuba, (Coll. Am. Ent. Soc.) Basin of face not striate; the occiput and prothorax shining, with subobsolete punctures; the postscutel produced, flattened, subtruncate; the first and second segments of tergum with fine, separated punctures, the third segment roughened; claws without apparent teeth.

### **HOLOPYGA** Dahlb.

Dahlbom classes this genus with his *Elampidæ*, on account of its three toothed mandibles and its pectinate claws. Externally it presents exactly the same appearance as *Hedychrum*.

#### **Holopyga ventralis.**

*Hedychrum ventrale* Say, Long's 2d Exp. App. 330, 1, 1824.

*Holopyga Dohrni* Dahlb., Hym. Eur. ii, 48, 24, 1854.

*Holopyga compacta* Cresson, Proc. Ent. Soc. Phil. iv, 304.

*Hab.*—N. Y., N. J., Del., Ill., Cuba, (Coll. Am. Ent. Soc.) Numerous specimens, all females.

Specimens vary much in color, some being mostly green, and some greenish-blue, with purplish bands on the tergum when it is much bent. The apex of the third abdominal segment has a wide shallow



notch in the middle, with a very obtuse angulation on each side. The basin of face has cross striæ; basin of first segment of tergum polished, punctures of first and second segments of two sizes, separated, more dense and equal on the third segment. The wing scale is purplish. The first tarsal joint green or with greenish reflections above; claws with three or four inner teeth. Wings sometimes obscure, but generally with a well defined obscure apical half.

### **HEDYCHRUM** Latr.

Mandibles at the apex bidentate; apical tooth curved, narrow; inner tooth very short, broad, not deeply notched. Head often concave behind, fitting closely upon the prothorax; summit of the basin of face without cross carina; external angles of the face very acute, not preceded by a fissure as in *Chrysis*. Claws of the tarsi bifid or with one inner tooth.

The males show three ventral segments, the females generally show a narrow fourth segment connected with the oviduct. The hinder femora of the males are often thickly covered before with whitish pile.

#### *Tabular synopsis of the species.*

A punctured area between the postscutellum and the dividing ridge of the metathorax.

Claws bifid or with a strong inner tooth near the tip.

Basin of face polished at sides and summit, with cross striæ in the middle.

Pro- and mesothorax and tergum polished, punctures minute, sparse.

Back of the head concave, its upper edge acute, fitting closely to the thorax.....**obsoletum.**

Basin of face with cross striæ.

Pro- and mesothorax punctured.

Tergum polished, punctures moderate, separated, base and apex of each segment smooth; back of head not concave.....**Wiltii.**

Tergum closely punctured, back of head concave, fitting closely to thorax.

Thorax brightly cupreous above..... **cupricolle.**

Thorax green and violet above.

Apical segment not emarginate.....**vernale.**

Apical segment emarginate.....**cyaniventre.**

Claws with a feeble inner tooth.

Basin of face punctured at sides, striate across the middle.

Tergum thickly covered with moderate punctures, margin of the third abdominal segment lightly sinuate, neither notched nor angulate.....**dimidiatum.**

Basin of face punctured, a slender polished space down the middle.

Tergum polished, punctures minute, scattered; third abdominal segment pinched at sides, margin subconical.....**viride.**



Postscutellum connecting abruptly with the short dividing ridge of the metathorax.

Claws with a strong inner tooth.

Basin of face striate.

Apex of third abdominal segment lightly notched, obtusely angulate at sides, sinuous at base.

Three basal joints of antennæ green.....**Cressoni.**

Basal joint of antennæ green.

Tergum polished, punctures moderate, numerous, separated; head narrower than thorax.....**Louisianiae.**

Apex of third segment not emarginate, sides obtusely angulate.

Two basal joints of antennæ green.

Punctures of 3rd segment scarcely larger than 2nd.....**violaceum.**

Punctures of apex of second and surface of third segments large, surface rugose.....**asperum.**

Claws with a feeble inner tooth.

Basin of face punctured, feebly striate near the antennæ; postscutel short, its basal angle prominent, acute; tergum and venter with moderate, dense punctures.....**cæruleum.**

**Hedychrum obsoletum** Say, Bost. Jour. i, 1835, 284, 1, ♀.

*Hedychrum Zimmermanni* Dahlb., Dispos. 1845, 2, 1; Hym. Eur. ii, 61, 82.

*Hab.*—Penn., Ill., (Coll. Am. Ent. Soc.); Iowa, (Say). In punctures and color, this is much like *Elampus sinuosum* Say, but has less of purple. The back of the head fits closely upon the thorax, so that the separation is hardly visible.

**Hedychrum Wiltii** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 305, ♂.

*Hab.*—Colorado, (Coll. Am. Ent. Soc.) This is the largest species of the genus yet described in this country. Color greenish-blue, with violaceous reflections. Length .50 inch.

**Hedychrum cupricolle** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 305, ♀.

*Hab.*—Colorado, (Coll. Am. Ent. Soc.) The only species yet discovered here, with cupreous or golden colors; the whole thorax above is of this character. Length 4 lines.

**Hedychrum vernale** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 104, ♂.

*Hab.*—Cuba, (Coll. Am. Ent. Soc.)

**Hedychrum cyaniventre** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 104, ♂.

*Hab.*—Cuba, (Coll. Am. Ent. Soc.)

**Hedychrum dimidiatum** Say, Long's 2d Exp. ii, 331, 2, 1824.

*Hab.*—Conn., N. Y., Pa., Del., Va., (Coll. Am. Ent. Soc.) This species may readily be known by the striæ which do not cross the basin of face, and the punctured area beneath the postscutel; the tergum has variable violaceous tints, the apex of the final segment is broadly rounded. Length ♂ ♀ .28 inch.



**Hedychrum viride** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 306, ♀.

*Hab.*—Colorado, Dacota, California, (Coll. Am. Ent. Soc.) Colors almost wholly green. In the subconical and pinched abdomen this approaches to *Elampus*. Length  $3\frac{1}{4}$  lines.

**Hedychrum Louisianiae** n. sp.—♂.—Color green, spotted with blue on the occiput and prothorax, and with violaceous reflections in the middle of tergum; tegulae and venter purple; apical half of wings subopaque; basin of face with cross striae, and a polished space at summit; mandibles long and stout, with two feeble incisions within; head and thorax with large close punctures; postscutel rounded behind, its edge closely set with large punctures; the declivity to the dividing ridge of metathorax abrupt, the first side foveola small, longer than wide, the second very large; tergum with moderate separated punctures, a narrow polished band at apex and base of each segment, the margin of third segment slightly hollowed in middle and obtusely angulate at sides; venter purple, basal third of each segment shining, remainder dull with punctures and coarse hair; hinder femora purple, covered before with dense whitish hair; apex of tibiae and the tarsi brownish; claws with a large inner tooth. Length .48 inch.

*Hab.*—Louisiana, (My own collection and that of the Am. Ent. Soc.) Two specimens.

**Hedychrum violaceum** Brullé, Hym. iv, 51, 2, ♂.

*Hab.*—Conn., Del., Va., Mex., (Coll. Am. Ent. Soc.) I find no male which coincides with Brullé's description of *violaceum*, but several females. So with *H. asperum*, I find very many males and no females. To avoid making new species, I have thought best to consider the *violaceum* of Brullé as a female. Very possibly the two are the sexes of one species.

**Hedychrum asperum** Brullé, Hym. iv, 52, 3.

*Hab.*—Conn., Pa., Va., Dac., Mex., (Coll. Am. Ent. Soc.) This presents several variations in form and punctures.

♂.—Apex of third segment of tergum obtusely rounded between the two outer obtuse angles; surface of first and second segments (except apex of second), with closely set moderate, deep punctures, growing larger toward apex of second and on third, posterior femora green.

Var. *a.*—♂.—Apex of third segment between the outer obtuse angles convex nearly in the arc of a circle, or a little more; a polished space down the middle of first and second segments; hinder femora purple or violaceous. Mexico, (Coll. Am. Ent. Soc.)

Var. *b.*—♂ ♀.—Apex of third segment subconic; tergum polished, first and basal two-thirds of second segments with small equal shallow separated punctures; hinder femora of female cyaneous, of male green. Dacota, (Coll. Am. Ent. Soc.)



**Hedychrum cæruleum** n. sp.—♀.—Color greenish-blue; tegulæ and two basal joints of antennæ the same; tips of tibiæ and tarsi brown; wings faintly clouded; basin of face punctured, feebly striate near antennæ; anterior edge of clypeus straight; mandibles small, with no perceptible inner teeth; head and thorax closely punctured; postscutellum short, triangular, conical, its hinder angle elevated, the first foveola longer than wide, reaching the summit of cone, the second large, almost coalescing with that on the other side; tergum covered with close numerous little punctures, apex rounded; venter closely punctured. Length .16 inch.

*Hab.*—Dacota, (Coll. Am. Ent. Soc.). One specimen.

**Hedychrum Cressoni** n. sp.—♀.—Color green, changing into blue-black at apex of and across mesothorax, and at base of each segment; bright green beneath; a violaceous stripe connecting the summit of eyes back of the ocelli; basal half of wings hyaline, apical half clouded, darkest near stigma; the three basal joints of antennæ, venter and legs, green; basin of face shining, polished near antennæ, the upper third with cross striæ; head and prothorax covered with coarse, separated pits, closer on the head; scutel continued in the form of a frustrum of a cone beyond the ordinary polished foveolæ on each side; basin at base of second abdominal segment abrupt, nearly as wide as segment, polished; tergum covered with small distinct punctures across the apex of each segment, and coarser at sides; margin of third segment lightly notched, and very obtusely bent at sides; inner margin distinctly hollowed, with a defined basin from the notch half across the segment; claws with a strong inner tooth and a distinct tooth at base. Length .48 inch.

*Hab.*—Mexico, (Coll. Am. Ent. Soc.) One specimen.

### CHRYISIS Linn.\*

Sec. I.—*Margin of third abdominal segment rounded, the angles or corners on each side rounded or very obtusely angulate.*

No carina across the basin of face below the ocelli.

Apical margin of third segment rounded, flattened at apex, corners rounded; ante apical series of pits ending near the angles.....**hilaris**, ♂.

Apical margin subtruncate.

An obtuse angle on each side, not sharply defined; ante-apical series of pits ending near the base of segment; the pits near the middle longer than wide.....**pacifica**, ♀.

An obtuse well defined angle on each side, the margin between the angles sinuate.....**integer**, ♀.

A carina across the basin of face, the basin with cross striæ.....**striatellus**.

**Chrysis hilaris** Dahlb., Hym. Eur. ii, p. 103, 56, 1854.

*Hab.*—Canada, Connecticut, (Coll. Am. Ent. Soc.)

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\* The colors of most of our species are green, changing into blue or violaceous. Almost invariably when the insect is rolled up into a ball or bent, violaceous bands are seen across the tergum and shoulders. When the insect is not bent these disappear beneath other parts of the body. Many describers seem to be ignorant of this, and cause great confusion in their haste to make new species.



♂.—The basin of face in this and the two succeeding species, is punctured and not well defined. The four basal joints of the antennæ are green. Color of body mostly blue-green. Punctures of prothorax and first segment of tergum separated, of two sizes, with numerous minute punctures between; those of second segment smaller as they approach the apex, where they are subobsolete and the surface polished; at the sides they are more abundant, with many larger shallow pits; on the third segment they are larger and more dense. The ante-apical series of pits ends near the side angles. The series of foveolæ crossing the mesopleura longitudinally, are similar in this and *pacifica*, viz.: a distinct round deep pit near the abdomen; the next two or three toward the head are divided by subobsolete carinæ. The mesopleura is not sharply defined. Length .22 inch.

**Chrysis pacifica** Say, Macl. Lyc. i, 1828, 82, 1.

*Hab.*—Mass., Conn., N. Y., Del., (Coll. Am. Ent. Soc.)

♀.—The description of Say applies equally well to the above, which is probably the male of this. The ante-apical series of pits extends nearly to the base of the segment; the foveola are longer than wide, becoming round at the sides; apical margin of the segment with indistinct cross striæ; the side angles of the margin are better defined in some specimens than in others; between these and the base of the segment, the margin shows another subangulation. In some cases the basin of face shows a polished space down the middle. Length .22 inch.

**Chrysis integra** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 306, 1.

*Hab.*—Massachusetts, Colorado, (Coll. Am. Ent. Soc.)

♀.—This is much larger than the other species, which it closely resembles in form. The color is mostly green in specimens from Colorado, mostly bluish in an individual from Massachusetts. There are about three sizes of punctures on the tergum, with minute punctures between, especially on the smooth subcarinate space down the middle. The marginal angles at sides of third segment are well defined, slightly prominent beyond the inner margin, the outer sides sinuous, with a depression where there is an angulation in *pacifica*. The line of foveolæ crossing the mesopleura are not as large as in *hilaris*, and more numerous; the large pits beneath have fine cross striæ. Length .50 inch.

Var. *a.*—♀.—The angles at sides of third segment are produced into strong teeth, the punctures of the segment more dense, the



ante-apical series of pits deep, confluent. The cross striæ in the mesopleural pits are wanting in the specimen from Massachusetts, which may be a distinct species.

**Chrysis striatellus** n. sp.—♂ ♀.—Color greenish-violaceous, with more of green upon the head, sides of thorax, and apex of each segment of abdomen; most part of tergum violet-blue; the three basal joints of antennæ and first tarsal joint green; wings very faintly clouded, nervures of the discoidal cell quite indistinct, marginal cell complete, its lower vein bent, not distinctly angulate; basin of face with cross striæ, its sides with white hair, most abundant in the males; a carina, quite removed from the ocelli, across its upper margin, not touching the eyes; clypeus with a widely angulate depression in the middle; mandibles with an incision near the middle; head and thorax closely covered with nearly equal punctures; a smooth area in the front of scutellum, its surface not polished; a large punctured depression in front of postscutel, and the deep central hollow of basin of first segment, all punctured; surface of tergum not polished, coriaceous, covered with separated, moderate, deep punctures; ante-apical space of third segment deep, its series of pits longer than wide, subobsolete, the apical margin rounded, without angulate corners, with a wide shallow depression in the middle, at times; mesopleura with well defined, subcarinate edges. Length .23 inch.

*Hab.*—Mass., Pa., Del., Va., Ill., (Coll. Am. Ent. Soc.)

Sec. II.—*Margin of third abdominal segment sinuate, its middle notched.*

Notch moderate, its inner angles distinct, the margin sinuate with no apparent angles at corners; basin of face with cross striæ.....**perpulchra**.  
Notch rather deep, the margin sinuate, with a distinct angle on each corner; basin of face punctured.....**densa**.

**Chrysis perpulchra** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 308, ♂ ♀.

*Hab.*—Can., Del., Col., (Coll. Am. Ent. Soc.)

Specimens differ much in color and in the form of margin of third segment. All have a cross carina above the basin of face (but separated from it by a punctured space), from each side of which springs a carina enclosing the lower ocellus. The ante-apical foveolæ are longer than wide, deep and distinct. The mesopleura below the middle is narrow, bent and produced to an acute angle, with well defined side ridges. Length .37 inch.

**Chrysis densa** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 307, ♀.

*Hab.*—Colorado, (Coll. Am. Ent. Soc.)

The sides of the third abdominal segment beyond the angular corner are straight; the ante-apical space is shallow, the foveola open beneath; mesopleura as above, the series of pits crossing the middle numerous and very deep. Length .40 inch.



Sec. III.—*Margin of third abdominal segment bidentate.*

**Chrysis scitula** Cresson, Proc. Ent. Soc. Phil. iv, 1865, 309.

*Hab.*—Colorado, (Coll. Am. Ent. Soc.)

The two apical teeth are as near as the two middle teeth in the 4-dentate species; there are two very obtuse retracted outer angles where the outer teeth would be. The face has no cross carina, the basin is deep, punctured. The mesopleura below its middle is well defined, narrow and produced to an acute angle.

Sec. IV.—*Margin of third abdominal segment tridentate.*

Margin with three acute teeth; the ante-marginal space wide, smooth, with two or three large open pits and several round separate pits. Postscutellum subconic, at the apex sublacerate. Segments of tergum smooth, with large, round, deep, separated punctures of two sizes upon first and third segments, smaller on second with minute punctures between on the sides of all; base of first segment with three punctured basins the central deepest. An irregular carina across the face below ocelli, with a carina at each end parallel with eyes, which may be traced around the whole orbit. Females with a third, small ventral plate protruded beyond the middle of second.

Two carinæ arising from the transverse carina.

Not inclosing lower ocellus.....**parvula.**

Inclosing lower ocellus.....**mucronata.**

**Chrysis parvula** Fabr., Syst. Piez. 176, 30, 1804; Dahlb., Hym. Eur. ii, 191, 103, ♂ ♀.

*Chrysis carinata* Say, Ann. Macl. Lyc. i, 82, 2.

*Chrysis tridens* Lep et Serv., Encyc. i, 405; (Pyria), Brullé, Hym. iv, 46, 34, ♀.

*Chrysis 3-dentata* Dahlb., Dispos. 1845, 15, 22.

*Chrysis virens* Cress., Proc. Ent. Soc. Phil. iv, 309, ♀.

*Hab.*—Conn., N. Y., Del., Md., Va., Ill., Fla., Miss., La., Col., (Coll. Am. Ent. Soc.) Specimens differ greatly in color and size.

**Chrysis mucronata** Brullé, Hym. iv, 1846, 48, 33, ♀.

*Hab.*—Lower California, Mexico, (Coll. Am. Ent. Soc.)

♂ ♀.—Color a brilliant green and violet, with black-blue spots upon the tergum, (not the bands which appear when the tergum is bent). This is probably a variety of *C. parvula*.

(The 4- and 6-dentate species not studied).